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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,119	04/26/2002	Milan Hajek	HAJEK ET AL-1 (PCT)	1539
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WILLIAM COLLARD COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			EXAMINER HERRING, LISA L	
			ART UNIT	PAPER NUMBER
			1731	

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,119

Applicant(s)

HAJEK ET AL.

Examiner

Lisa Herring

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 26 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: There is a grammatical error on page 5, in the Brief description of the drawings section. In the 1st line of this section applicant states "The accompanied drawings shows a schematic...", examiner suggests changing statement to "The accompanied drawing shows a schematic...", this will correct the grammatical errors and reflect appropriately that there is only 1 drawing in the disclosure. Appropriate correction is required.

Claim Interpretation

1. Examiner has noted the use of "consists substantially of" in Claim 6, 2nd line, the examiner has interpreted "consists substantially of" as open language equivalent to the phrase "comprising of".

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Childs, Jr. (3,673,288) in view of Tanaka et al. (4,900,894) and in further view of Sutton et al. (4,219,361) and Derwent abstract for Bienvenu (WO9221630). Childs, Jr. (3,673,288) discloses microwave heating of refractory bricks made of a mixture of natural materials comprising dolomite, periclase, and magnesite. In addition, Childs, Jr.

(3,673,288) discloses in Column 2, lines 73-75, Column 3, lines 1-3, and Column 3, lines 18-22 the bricks are heated from ambient temperatures to 700°F using microwaves at 900 MHz to 25 GHz, which falls within the range of the applicant's disclosure. Childs, Jr. (3,673,288) fails to disclose: 1) heating of glass and natural materials of volcanic origin, 2) heating from ambient to a temperature greater than 700°F, 3) additional additives to the glass and natural materials elected from the group comprising carbides, nitrides, or borides, 4) the amount of the additive, and 5) natural materials comprising basalt, granite, marble, andesite, syenite, and other materials absorbing microwave radiation. However the following discussion of the remaining references disclose the missing pieces. Tanaka et al. (4,900,894) discloses heating quartz glass with microwave energy up to 2000°C with a microwave frequency range between 1 MHz to 10 GHz once the glass is no longer transparent to microwave energy. Sutton et al. (4,219,361) in Column 2, lines 45-50, discloses a method of rendering materials not susceptible to heating by means of microwave energy, for example glass, can be rendered susceptible to heating by microwave energy by adding or placing a reactive agent in close proximity to the material. A reactive agent is a material susceptible to heating by microwave energy. In Column 3, lines 25-40, one reactive agent disclosed is Chromium Nitride, and in Column 4, lines 29-31, it has been disclosed as little as 1% by weight of the reactive material will enable some heating by microwave energy to take place. For example, 0.1 kg, 10 kg, or 1 kg of material not susceptible to microwave energy heating requires as little as 1, 100, or 10 grams of reactive agent, respectively. This falls within the ranges claimed by applicant. Derwent abstract for Bienvenu

(WO9221630A) discloses a ceramic material containing carbide, nitride, or boride can be heated with microwave energy. Accordingly, it would be obvious to one skilled in the art at the time the invention was made that any glass material and any natural materials, specifically of volcanic origin, can be heated with microwave energy as long as a reactive agent is added or in close proximity in the amounts disclosed by Sutton et al. (4,219,361), and in addition, it would be obvious to one skilled in the art to use microwave frequencies between 1 MHz to 10 GHz, as disclosed by Tanaka et al. (4,900,894), for the purpose of heating glass materials, which are now capable of being heated by microwave energy.

4. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 1 above, and further in view of Igarashi (5,304,701) and Hardwick et al. (4,490,287). Regarding Claim 6, Figures 1 and 2 in Igarashi (5,304,701) disclose a furnace comprising a microwave device (17), an outer shell (4) provided with a cover (8), an inner shell, and a tank (1). Igarashi (5,304,701) fails to disclose: 1) the specifics of the microwave device and 2) a total output from 0.1 to 1 kW per 1 kg of the processed glass. However, Hardwick et al. (4,490,287) discloses in Column 10, Example 2, an experiment using a microwave power of approximately 1.4 kW to produce 1.344 kg of glass. The furnaces disclosed in Figure 1 from Igarashi (5,304,701) and in Figure 1 from Hardwick et al. (4,490,287) are similar in structure, since both furnaces disclosed comprised a microwave energy heating source, an outer shell, an inner shell, and a tank. Accordingly, it would have been obvious to one skilled in the art at the time the invention was made, to use a microwave output of 0.1 to 1 kW

per 1 kg of processed glass for a furnace comprising a microwave heating source, an outer shell, an inner shell, and a tank.

5. Regarding Claim 10, In re Lindberg states: "Fact that a claimed device is portable or movable is not sufficient by itself to patentably distinguish over an otherwise old device unless there are new or unexpected results." Accordingly, it would be obvious to one skilled in the art at the time the invention was made, that the addition of wheels to the apparatus claimed in claim 6 would make the device portable or moveable.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1 and 6 above, and further in view of extrinsic evidence, from the Corrosion and Chemical Resistant Masonry Materials Handbook. The reference discussed in Claim 6 above, Hardwick et al. (4,490,287) in column 7, lines 10-12, discloses the shell around the tank contains silica/alumina thermal insulating bricks. Hardwick et al. (4,490,287) fails to disclose the silica/alumina insulating material has a heat resistance up to 1750°C. However, the Corrosion and Chemical Resistant Masonry Materials Handbook on page 172 discloses various refractory bricks with alumina have a service range between 1700-2015°C. Accordingly it would have been obvious to one skilled in the art at the time the invention was made to insulate the tank in the furnace with silica/alumina refractory brick, as disclosed in Hardwick et al. (4,490,287), and to choose a refractory brick with a heat resistance based on processing temperatures between 1700-2015°C, as disclosed by the Corrosion and Chemical Resistant Masonry Materials Handbook.

7. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1 and 6 above, and further in view of Gallawa, The Purpose and Function of Interlock Switches, Valentine (4,126,651), and Monaghan (4,399,544). References from Claim 6 above, Igarashi (5,304,701) in Figure 1 discloses a fill neck and Hardwick et al. (4,490,287) in Figure 1 discloses a temperature indicator in the tank. Igarashi (5,304,701) and Hardwick et al. (4,490,287) fail to disclose: 1) a safety switch on the furnace cover, 2) an infrared sensor in the fill neck, and 3) a connection from the infrared sensor connected to a thermometer and controller provided with a microprocessor for the microwave generator control. However, the following discussion on the remaining references discloses the missing items. Gallawa, discloses using an interlock switch on a microwave oven. The switch was a required safety standard in August 1974 to prevent the production of microwave energy when the door is opened, and similarly, to prevent any microwave output until the door is firmly and safely closed. Monaghan (4,399,544) discloses in Figure 1 and in Column 8, lines 25-29, connecting the output of a temperature sensor to control the temperature of the melt with a controller. Valentine (4,126,651) discloses in Column 4, lines 60-65, an infrared thermal control to measure the temperature of the surface of the material during a microwave process. Accordingly, it would have been obvious to one skilled in the art at the time the invention was made: 1) to include a safety switch on the furnace, as disclosed by Gallawa, when the cover is open, 2) to use an infrared sensor in the apparatus for the advantage of thermal control in a microwave process, as disclosed by

Valentine (4,126,651), and 3) to connect the output of the infrared sensor to a controller, as disclosed by Monaghan (4,399,544).

Conclusion


8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Skylyarevich et al. (6,408,649) discloses microwave heating of sheet glass at various microwave frequencies. Concrete Admixtures Handbook, copyright 1995, which discloses various compositions of volcanic material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Herring whose telephone number is 571-272-1094. The examiner can normally be reached on Mon-Fri. 7am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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